ASSOCIATION FOR CONSUMER RESEARCH

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Innovating and Lagging As Signals of General Intelligence

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Innovating and lagging as signals of general intelligence.Kobe Millet, KULeuvenSiegfried Dewitte, KULeuvenWe approach innovativeness from a costly signaling perspective. We suggest that both innovative and lagging consumer behaviors signal general intelligence. Only highly intelligent consumers can afford not to follow the majority, possibly because they can justify their choices. Innovators and laggards do not follow the majority by definition. In three studies, we find evidence that (1) more intelligent people are expected to innovate or lag, (2) people who do not follow the majority, either by lagging or innovating, are actually more intelligent and (3) are perceived by others as more intelligent than those who follow the majority.

[to cite]:

Kobe Millet and Siegfried Dewitte (2006) ,"Innovating and Lagging As Signals of General Intelligence", in NA - Advances in Consumer Research Volume 33, eds. Connie Pechmann and Linda Price, Duluth, MN : Association for Consumer Research, Pages: 314-315.

[url]:

http://www.acrwebsite.org/volumes/13115/volumes/v33/NA-33

memory errors. The interesting aspect of this is that in certain situations these errors of recollection could go beyond the misinforming stimulus. Recent qualitative studies on the role of imagination in the consumption of products (Martin, 2004) have also provided us with an explanation of how imagination, by way of enhancing vivid imagery and inducing embellishment, could actually lead to greater errors in recall of the consumption experience.

The above two threads of rationale lead us to expect that some forms consumption, specifically, consumption experiences that encourage extended processing of information (through elaboration), might actually lead to *greater* errors in memory as compared to experiences with no such extended processing. Studies on autobiographical memories find that in situations when participants were encouraged repeatedly (along with misinformation stimuli) to provide detailed accounts for their childhood experiences, misinformation effects were particularly strong and confidence in their recall were also high. Accordingly, we expect that when consumers are in an immersive experience and are naturally placed in a situation conducive to imagination, their consumption memory is not only susceptible to misinformation but can also be led to *confabulate*. That is, via the misinforming stimulus and imagination, they can be expected to not only recall their experience to be more consistent with the misinforming stimulus but also go beyond the stimulus itself and 'hyper-recall' aspects or features of the experience that were actually not presented. We expect these reconstructions to be specific features or aspects that are extensions of the (main) misinforming stimulus. In a way, contrary to previous misinformation effect studies, we expect misinformation at the more 'general' thematic level to lead to greater 'specific' feature-level false alarms.

Based on a survey and pretest examining product relevance and involvement, we chose computer games as the test setting. In a 2 X 2 computer-based experiment, the misinformation stimulus manipulated a) the basic theme of the game and b) the primary evaluative dimension related to the game via misleading questions presented after the participants had read a description and had actually played the game for 4 minutes. Imagination was manipulated by a story which placed them in an imaginary problem situation and asked them to imagine and write down their account of the way in which they tackled the problem. In addition to free recall measures, we also collected recognition measures on a variety of words that were semantically related (as well as unrelated) to the key misinformation stimulus. Preliminary analyses show that the main effect of misinformation on both theme-related and evaluation-related words was significant at the $p<0.001$ level. That is, when exposed to the incorrect theme (in the misinformation condition), participants' recognition of the misinformation-consistent theme and evaluation words was significantly more than the no-misinformation condition. The main effect of imagination was not significant on both. However, imagination had a significant effect on unrelated words, i.e. words that were neither part of the description nor part of the misinformation stimulus. Further, this effect was found to be inhibitory. That is, in the imagination condition, participants were *less* likely to falsely recognize unrelated words. The misinformation X imagination interaction was also not significant.

The pattern of results suggests that consumers' susceptibility to misinformation is robust. However, increased thought put in on the game after initial consumption (by way of the 'imagine' instruction) seemed to do two things. Firstly, it led participants along a different path which made them falsely recognize words that were actually consistent with the imagination story (and thus inconsistent with both the game and the misinformation). Secondly, the increased thought induced by the imagination condition probably enhanced the involvement of these participants and led them to reduced false alarms with respect to both misinformation-related and completely unrelated words. The lack of an interaction between misinformation and imagination leads us to believe that further study is necessary to untangle the effects of involvement and imagination upon consumers' susceptibility confabulate and embellish their memories.

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We approach innovativeness from a costly signaling perspective. We suggest that both innovative and lagging consumer behaviors signal general intelligence. Only highly intelligent consumers can afford not to follow the majority, possibly because they can justify their choices. Innovators and laggards do not follow the majority by definition. In three studies, we find evidence that (1) more intelligent people are expected to innovate or lag, (2) people who do not follow the majority, either by lagging or innovating, are actually more intelligent and (3) are perceived by others as more intelligent than those who follow the majority.

The Impact of Mathematics Anxiety on the Evaluation of Price and Price Presentation Formats

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Price, a numeric aspect of product information, at time requires simple calculations and comparisons with either prices of competing offers or a price in memory to determine the savings or evaluating an offer. But for some consumers these computations could become a source of anxiety. This research develops a conceptualization that predicts the effects of mathematics anxiety and motivation to process information on the processing of price information and price presentation formats. The results from two studies show that mathematics anxiety influences the evaluation of prices and price presentation formats.

Intuition in Consumer Decision Making

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Almost 30 years ago, Mace (1977) published a paper on his interpretation of the theories of perception espoused by psychologist James J. Gibson. The subtitle of that paper should serve as a constant reminder of a very common mistake in consumer research, as well as a roadmap to significantly greater understanding of consumers and consumer decision making from an academic and an applied perspective: "ask not what's inside your head but what your head's inside of." Qualitative research into naturalistic decision making (e.g., Zsambok & Klein, 1997), including consumer decision making (e.g., Readinger, 2004), has repeatedly shown the importance of recognizing environmental cues in making split-second decisions. Currently, the most convincing model explaining this phenomenon is Klein's (1989) Recognition-Primed Decision (RPD) model. It shifts the emphasis of decision making away from selecting among a set of options, and towards assessing a situation and mentally simulating courses of action. Essentially, it places a premium on the ability of the decision maker to perceive and interpret the environment. In this framework, recognizing relevant aspects of past experience in the current situation is the fundamental step in making many rapid decisions. Therefore, understanding "what the head's inside of" is the key to understanding consumers' intuitions in many naturalistic situations.

Domain experts recognize in an instant the presence of certain contextual factors that tell them nearly everything they need to know about a situation. For example, critical care nurses in a neonatal intensive care unit (NICU) know (without explicitly knowing that they know) the factors that indicate sepsis (Crandall & Calderwood, 1989). They may have memorized a list of symptoms "by heart," but they recognize the physical manifestations of those symptoms "by intuition." In many cases, all such experts need is an appropriate frame in which to situate their cognition; they need to recognize features of the environment that are familiar, and then proceed to build expectations about what will happen next and what cues and factors they should pay attention to. Consider another example. When professional hockey players are on the ice in a game situation, they recognize a defense and take actions to exploit its weaknesses well before they can verbalize where their opponents are located and what they're doing (Readinger, Ross, & Phillips, in preparation). The action (or reaction) seems to precede the explicit decision. The players call it intuition or instinct, and it is very similar to what the NICU nurses mentioned above. Intuition, though, is a keen perception of the environment, now and in the past. It is the conjunction of what an expert has thought and done before, when the environmental context was relevantly similar.

In this sense, buying a product is not significantly different from recognizing sepsis or playing professional hockey. The critical contingency in the comparison is the "expertise" of the consumer. Is he or she an expert, in the way that the NHL hockey players or the nurses are? There are differences, but the similarities are more striking. The ability to "size up" a situation in a moment's glance often comes with practice, and it is present when a shopper purchases household goods at a supermarket, just as it is when nurses diagnose sepsis. Behavior often becomes routinized and difficult to verbalize, when consumers are questioned. In the extreme, the experts do not even recognize that they are making any decisions at all. Certainly not all consumer behavior will be at the expert level; purchases made infrequently, for example, are often considerably more analytical (involving the explicit comparison of options) in nature. In these cases, there has been no opportunity for intuition to develop, no environmental and contextual factors that can be grouped across experiences. In some cases, though, consumer intuition can be studied and demystified in the same way that tacit, expert knowledge has been researched in other domains.

Research techniques exist, such as the Critical Decision Method (e.g., Hoffman, Crandall, & Shadbolt, 1998), that focus attention on the aspects of the environment that are critical in making rapid decisions. These have been used on a somewhat limited basis for purposes of consumer research, but will be critical in further exploring the role of intuition in consumer decision making, as well as identifying the cases where analytical decision making predominates. Consumer needs and wants can ultimately be better met when research professionals have the appropriate tools and theoretical stance to uncover the primary environmental cues and factors behind split-second, intuitive behaviors, and relate these to cognition and behavior.

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